

Abstract of the Disclosure

A polymerase chain reaction (PCR) device with micro-valves, which are opened or closed using a simple control mechanism is provided. The PCR device includes: an inlet through which a biochemical fluid is injected; an outlet through which the biochemical fluid is discharged; a PCR channel positioned between the inlet and the outlet; first and second micro-valves, which control opening and closing of the inlet and the outlet; and a sol-gel transformable material, which transforms from a sol state into a gel state at a temperature lower than DNA denaturation temperature, annealing temperature and extension temperature and higher than room temperature.